



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/45 DATE: May 19, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the two soil samples collected on May 4, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1

**SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

S-050405-PP-370

S-050405-PP-371

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:
 SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (soil)	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/ko/20 DATE: March 9, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the one water and 23 soil samples collected on February 18, 2005, from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The result for 4-methylphenol in sample S-021805-PP-221 has been qualified as estimated (UJ) due to poor recoveries of the acidic surrogate compounds in the semivolatile organic compound (SVOC) analysis of this sample. For the remaining samples, the surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

laboratory control sample percent recovery and RPD data were acceptable.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included arsenic and SVOC analyses of one equipment blank sample. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no analytes detected in the equipment blank sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, with the qualifications stated above.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-021805-PP-037
S-021805-PP-039
S-021805-PP-207
S-021805-PP-208
S-021805-PP-209
S-021805-PP-210
S-021805-PP-211
S-021805-PP-212
S-021805-PP-213
S-021805-PP-214
S-021805-PP-215
S-021805-PP-216
S-021805-PP-217
S-021805-PP-218
S-021805-PP-219
S-021805-PP-220
S-021805-PP-221
S-021805-PP-222
S-021805-PP-223
S-021805-PP-224
S-021805-PP-225
S-021805-PP-226
S-021805-PP-227
W-021805-PP-505

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Arsenic	SW-846 1311/6010B

¹ Methods were referenced from:
SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
SVOCS -water	- 7 days from sample collection to extraction
SVOCS - soil	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
Total Arsenic	- 180 days from sample collection to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Arsenic	- 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Pritesh Pathak REF. NO.: 019023

FROM: Dave Hendren/lg/54 DATE: August 29, 2005

RE: **Data Quality Assessment and Validation for Wipe Samples Collected from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the 19 wipe samples collected on August 11, 2005, from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for PCBs following U. S. Environmental Protection Agency Solid Waste (SW) 846 Method 8082, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The samples were prepared and analyzed within the required holding time period (14 days from collection to preparation, 40 days from preparation to analysis).

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The recoveries of one surrogate compound in samples WS-081105-PP-016 and WS-081105-PP-017 exceeded the acceptable range. Therefore, the reported values for Aroclor 1254 in these samples have been qualified as estimated, and flagged "J". The remaining surrogate recoveries were acceptable.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, with the qualifications stated above.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
PCB WIPE SAMPLING
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

WS-081105-PP-001
WS-081105-PP-002
WS-081105-PP-003
WS-081105-PP-004
WS-081105-PP-005
WS-081105-PP-007
WS-081105-PP-008
WS-081105-PP-010
WS-081105-PP-011
WS-081105-PP-012
WS-081105-PP-013
WS-081105-PP-014
WS-081105-PP-015
WS-081105-PP-016
WS-081105-PP-017
WS-081105-PP-018
WS-081105-PP-019
WS-081105-PP-020
WS-081105-PP-021



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/53 DATE: August 15, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for five soil samples collected on July 22, 2005, from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-072205-PP-417
S-072205-PP-418
S-072205-PP-419
S-072205-PP-420
S-072205-PP-421

TABLE 2
SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:
SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (soil)	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/52 DATE: July 18, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the three soil samples collected on June 17, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included analysis of a field duplicate sample. The results for the field duplicate samples analyses are presented in Table 4. The QAPP specifies that an advisory limit of 50% RPD be applied to analytes detected at concentrations at least five times the quantitation limit. Therefore, the reported values for arsenic in samples S-061705-PP-414 and S-061705-PP-415 have been qualified as estimated. All reported values for SVOCs were less than five times their respective quantitation limits and therefore did not require qualification.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, with the qualifications stated above.

Attachments

TABLE 1

SAMPLE IDENTIFICATION NUMBERS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

S-061705-PP-413

S-061705-PP-414

S-061705-PP-415

TABLE 2

SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:
SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (soil)	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis

TABLE 4

SUMMARY OF DETECTED ANALYTES FROM FIELD DUPLICATE SAMPLES
 SITE INVESTIGATIVE SAMPLING
 WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
 WAUKEGAN, ILLINOIS

<i>Analyte</i>	<i>Investigative Sample (mg/Kg) S-061705-PP-414</i>	<i>Duplicate Sample (mg/Kg) S-061705-PP-415</i>	<i>RPD ¹</i>
<u>Metals</u>			
Arsenic	602	320	61
<u>SVOCs</u>			
Benzo(b)fluoranthene	0.84	2.4	96
Benzo(a)pyrene	0.41	1.6	118
Naphthalene	0.47	2.5	137
Benzo(a)anthracene	0.52	1.8	110

¹ RPD - Relative Percent Difference



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/51 DATE: July 13, 2005

RE: **Data Quality Assessment and Validation for Soil Sample Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one water (equipment blank) and one soil sample collected on June 30, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included arsenic and SVOC analyses of one equipment blank sample. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no target analytes detected in the equipment blank sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1

**SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

S-063005-PP-416

W-063005-PP-517

TABLE 2
SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (water)	- 7 days from sample collection to extraction
SVOCs (soil)	- 14 days from sample collection to extraction
	- 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/50 DATE: June 20, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the eight soil samples collected on June 8, 2005, from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-060305-PP-405
S-060305-PP-406
S-060305-PP-407
S-060305-PP-408
S-060305-PP-409
S-060305-PP-410
S-060305-PP-411
S-060305-PP-412

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:
SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
3rd Edition with Updates I through IIIA, November 1986.

TABLE 3
HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (soil)	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/49 DATE: June 6, 2005

RE: **Data Quality Assessment and Validation for Soil Sample Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one water and one soil sample collected on May 23, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included arsenic and SVOC analyses of one equipment blank sample. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no target analytes detected in the equipment blank sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1

**SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

S-052305-PP-404
W-052305-PP-516

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:
 SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (water)	- 7 days from sample collection to extraction
SVOCs (soil)	- 14 days from sample collection to extraction
	- 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/48 DATE: May 31, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the six soil samples collected on April 25, 2005, from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-042505-PP-364
S-042505-PP-365
S-042505-PP-366
S-042505-PP-367
S-042505-PP-368
S-042505-PP-369

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:
 SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3
HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (soil)	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/47 DATE: May 31, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the 13 soil samples collected on May 17, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included analysis of a field duplicate sample. The results for the field duplicate samples analyses are presented in Table 4. The QAPP specifies that an advisory limit of 50% RPD be applied to analytes detected at concentrations at least five times the quantitation limit. Therefore, the reported values for arsenic in samples S-051705-PP-401 and S-051705-PP-402 have been qualified as estimated. All reported values for SVOCs were less than five times their respective quantitation limits and therefore did not require qualification.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, with the qualifications stated above.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-051705-PP-391
S-051705-PP-392
S-051705-PP-393
S-051705-PP-394
S-051705-PP-395
S-051705-PP-396
S-051705-PP-397
S-051705-PP-398
S-051705-PP-399
S-051705-PP-400
S-051705-PP-401
S-051705-PP-402
S-051705-PP-403

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (soil)	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis

TABLE 4

SUMMARY OF DETECTED ANALYTES FROM FIELD DUPLICATE SAMPLES
 SITE INVESTIGATIVE SAMPLING
 WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
 WAUKEGAN, ILLINOIS

<i>Analyte</i>	<i>Investigative Sample (mg/Kg)</i>	<i>Duplicate Sample (mg/Kg)</i>	<i>RPD¹</i>
	<i>S-051705-PP-401</i>	<i>S-051705-PP-402</i>	
<u>Metals</u>			
Arsenic	77	172	76
<u>SVOCs</u>			
Benzo(b)fluoranthene	280	1,900	149
Benzo(a)pyrene	230	1,500	147
Dibenzofuran	360	2,300	146
Naphthalene	2,000	14,000	150
Benzo(a)anthracene	340	2,200	146

¹ RPD - Relative Percent Difference



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/46 DATE: May 24, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the four soil samples collected on May 10, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-051005-PP-387

S-051005-PP-388

S-051005-PP-389

S-051005-PP-390

TABLE 2

SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (soil)	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/45 DATE: May 24, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one water and 17 soil samples collected on May 6, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included analysis of one equipment blank sample and the analysis of a field duplicate sample. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no target analytes detected in the equipment blank sample.

The results for the field duplicate samples analyses are presented in Table 4. The QAPP specifies that an advisory limit of 50% RPD be applied to analytes detected at concentrations at least five times the quantitation limit. Therefore, the reported values for lead in samples S-050605-PP-374 and S-050605-PP-375 have been qualified as estimated.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, with the qualifications stated above.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-050605-PP-085
S-050605-PP-087
S-050605-PP-372
S-050605-PP-373
S-050605-PP-374
S-050605-PP-375
S-050605-PP-376
S-050605-PP-377
S-050605-PP-378
S-050605-PP-379
S-050605-PP-380
S-050605-PP-381
S-050605-PP-382
S-050605-PP-383
S-050605-PP-384
S-050605-PP-385
S-050605-PP-386
W-050605-PP-515

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Volatile Organic Compounds (VOCs)	SW-846 8260B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP-VOCs	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Arsenic	SW-846 1311/6010B

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs -water	- 7 days from sample collection to extraction
SVOCs -soil	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample leaching to completion of analysis
TCLP-Arsenic	- 180 days from sample leaching to completion of analysis

TABLE 4

SUMMARY OF DETECTED ANALYTES FROM FIELD DUPLICATE SAMPLES
 SITE INVESTIGATIVE SAMPLING
 WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
 WAUKEGAN, ILLINOIS

<i>Analyte</i>	<i>Investigative Sample (mg/Kg)</i>	<i>Duplicate Sample (mg/Kg)</i>	<i>RPD¹</i>
	<i>S-050605-PP-374</i>	<i>S-050605-PP-375</i>	
<u>Metals</u>			
Arsenic	124	49.2	86
<u>SVOCs</u>			
Benzo(b)fluoranthene	3.0	2.9	3
Benzo(a)pyrene	1.6	2.0	22
Benzo(a)anthracene	2.2	2.6	17

¹ RPD - Relative Percent Difference



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/44 DATE: May 12, 2005

RE: **Data Quality Assessment and Validation for the Soil Sample Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one soil sample collected on April 29, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The sample identified in Table 1 was analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The sample was prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative sample were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compound percent recoveries were acceptable, or qualification of data was not required due to surrogate recoveries.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with this sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1

SAMPLE IDENTIFICATION NUMBERS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

S-042905-PP-601

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP-VOCs	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Metals	SW-846 1311/6010B

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Metals	- 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/43 DATE: May 3, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the 11 soil samples collected on April 15, 2005, from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-041505-PP-322
S-041505-PP-323
S-041505-PP-324
S-041505-PP-325
S-041505-PP-326
S-041505-PP-327
S-041505-PP-328
S-041505-PP-329
S-041505-PP-330
S-041505-PP-332
S-041505-PP-333

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3
HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (soil)	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/42 DATE: May 2, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the 14 soil samples collected on April 19, 2005, from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-041905-PP-340
S-041905-PP-341
S-041905-PP-342
S-041905-PP-343
S-041905-PP-344
S-041905-PP-345
S-041905-PP-346
S-041905-PP-347
S-041905-PP-348
S-041905-PP-349
S-041905-PP-350
S-041905-PP-351
S-041905-PP-352
S-041905-PP-353

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (soil)	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/41 DATE: May 2, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one water and 11 soil samples collected on April 20, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included arsenic and SVOC analyses of one equipment blank sample. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no target analytes detected in the equipment blank sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-042005-PP-083
S-042005-PP-354
S-042005-PP-355
S-042005-PP-356
S-042005-PP-357
S-042005-PP-358
S-042005-PP-359
S-042005-PP-360
S-042005-PP-361
S-042005-PP-362
S-042005-PP-363
W-042005-PP-514

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP-VOCs	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Arsenic	SW-846 1311/6010B

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs -water	- 7 days from sample collection to extraction
SVOCs -soil	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Arsenic	- 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/40 DATE: May 2, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for two water and eight soil samples collected on April 18, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included analyses of two equipment blank samples. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no target analytes detected in the equipment blank samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-041805-PP-081
S-041805-PP-331
S-041805-PP-334
S-041805-PP-335
S-041805-PP-336
S-041805-PP-337
S-041805-PP-338
S-041805-PP-339
W-041805-PP-512
W-041805-PP-513

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP-VOCs	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Arsenic	SW-846 1311/6010B

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs -water	- 7 days from sample collection to extraction
SVOCs -soil	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Arsenic	- 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/39 DATE: April 22, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one water and 14 soil samples collected on April 12, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included arsenic and SVOC analyses of one equipment blank sample. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no target analytes detected in the equipment blank sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-041205-PP-077
S-041205-PP-079
S-041205-PP-310
S-041205-PP-311
S-041205-PP-312
S-041205-PP-313
S-041205-PP-314
S-041205-PP-315
S-041205-PP-316
S-041205-PP-317
S-041205-PP-318
S-041205-PP-319
S-041205-PP-320
S-041205-PP-321
W-041205-PP-511

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP-VOCs	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Arsenic	SW-846 1311/6010B

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs -water	- 7 days from sample collection to extraction
SVOCs -soil	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Arsenic	- 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/38 DATE: April 21, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the 10 soil samples collected on March 22, 2005, from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-032205-PP-264
S-032205-PP-265
S-032205-PP-266
S-032205-PP-267
S-032205-PP-268
S-032205-PP-269
S-032205-PP-270
S-032205-PP-271
S-032205-PP-272
S-032205-PP-273

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:
 SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/37 DATE: April 21, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the five soil samples collected on April 11, 2005, from the Waukegan Manufactured Gas and Coke Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-041105-PP-303
S-041105-PP-304
S-041105-PP-305
S-041105-PP-306
S-041105-PP-309

TABLE 2

SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:
SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
3rd Edition with Updates I through IIIA, November 1986.

TABLE 3
HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (soil)	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/36 DATE: April 19, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the two soil samples collected on April 8, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1

**SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

S-040805-PP-307

S-040805-PP-308

TABLE 2
SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B

¹ Methods were referenced from:
SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/35 DATE: April 13, 2005

RE: **Data Quality Assessment and Validation for the Soil Sample Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one soil sample collected on April 1, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The sample identified in Table 1 was analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The sample was prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative sample were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to the sample prior to preparation and analysis. The surrogate compound percent recoveries were acceptable, or qualification of data was not required due to surrogate recoveries.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with this sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1

SAMPLE IDENTIFICATION NUMBERS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

S-040105-PP-302

TABLE 2

SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:
SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
3rd Edition with Updates I through IIIA, November 1986.

TABLE 3
HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (soil)	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/34 DATE: April 8, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one water and 14 soil samples collected on March 23, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included arsenic and SVOC analyses of one equipment blank sample. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no target analytes detected in the equipment blank sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-032305-PP-069
S-032305-PP-071
S-032305-PP-073
S-032305-PP-075
S-032305-PP-274
S-032305-PP-275
S-032305-PP-276
S-032305-PP-277
S-032305-PP-278
S-032305-PP-279
S-032305-PP-280
S-032305-PP-281
S-032305-PP-282
S-032305-PP-283
W-032305-PP-509

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Arsenic	SW-846 1311/6010B

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
SVOCS - water	- 7 days from sample collection to extraction
SVOCS - soil	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
Total Arsenic	- 180 days from sample collection to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Arsenic	- 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/33 DATE: April 8, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one water and 17 soil samples collected on March 29, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included arsenic and SVOC analyses of one equipment blank sample. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no target analytes detected in the equipment blank sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-032905-PP-284
S-032905-PP-285
S-032905-PP-286
S-032905-PP-287
S-032905-PP-288
S-032905-PP-289
S-032905-PP-290
S-032905-PP-291
S-032905-PP-292
S-032905-PP-293
S-032905-PP-294
S-032905-PP-295
S-032905-PP-296
S-032905-PP-297
S-032905-PP-298
S-032905-PP-299
S-032905-PP-300
W-032905-PP-510

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:
 SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (water)	- 7 days from sample collection to extraction
SVOCs (soil)	- 14 days from sample collection to extraction
	- 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/32 DATE: April 8 2005

RE: **Data Quality Assessment and Validation for the Soil Sample Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one soil sample collected on March 30, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The sample identified in Table 1 was analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The sample was prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative sample were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to the sample prior to preparation and analysis. The surrogate compound percent recoveries were acceptable, or qualification of data was not required due to surrogate recoveries.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with this sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1

SAMPLE IDENTIFICATION NUMBERS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

S-033005-PP-301

TABLE 2
SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:
SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
3rd Edition with Updates I through IIIA, November 1986.

TABLE 3
HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (soil)	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/31 DATE: March 30, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one water and 12 soil samples collected on March 21, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included arsenic and SVOC analyses of one equipment blank sample. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no target analytes detected in the equipment blank sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-032105-PP-252
S-032105-PP-253
S-032105-PP-254
S-032105-PP-255
S-032105-PP-256
S-032105-PP-257
S-032105-PP-258
S-032105-PP-259
S-032105-PP-260
S-032105-PP-261
S-032105-PP-262
S-032105-PP-263
W-032105-PP-508

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (water)	- 7 days from sample collection to extraction
SVOCs (soil)	- 14 days from sample collection to extraction
	- 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023-84

FROM: Dave Hendren/lg/30 DATE: March 30, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the two soil samples collected on March 18, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. As a result of poor recoveries of the acidic surrogate semivolatile compounds in both samples, the detection limits of the following compounds have been qualified as estimated; o-cresol, m-cresol & p-cresol, pentachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol. The remaining surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

laboratory control sample percent recovery and RPD data were acceptable.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, with the qualifications stated above.

Attachments

TABLE 1

**SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

S-031805-PP-065

S-031805-PP-067

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP-Arsenic	SW-846 1311/6010B
TCLP-Semivolatile Organic Compounds (SVOCs)	SW-846 1311/8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B

Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample leaching to completion of analysis
TCLP-Arsenic	- 180 days from sample leaching to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023-84

FROM: Dave Hendren/lg/29 DATE: March 30, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the six soil samples collected on March 15, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. As a result of poor surrogate recoveries in sample S-031505-PP-246 the results for all SVOC, except naphthalene have been qualified as estimated. The remaining surrogate compounds percent recoveries were acceptable, or qualification of sample data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, with the qualifications stated above.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-031505-PP-246
S-031505-PP-247
S-031505-PP-248
S-031505-PP-249
S-031505-PP-250
S-031505-PP-251

TABLE 2

SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:
SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/28 DATE: March 30, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the two soil samples collected on March 17, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1

SAMPLE IDENTIFICATION NUMBERS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

S-031705-PP-061

S-031705-PP-063

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP - Benzene	SW-846 1311/8260B

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
TCLP	- 14 days from sample collection to leaching
TCLP-Benzene	- 14 days from sample collection (leaching) to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/27 DATE: March 22, 2005

RE: **Data Quality Assessment and Validation for the Soil Sample Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one soil sample collected on March 10, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The sample identified in Table 1 was analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The sample was prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative sample were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compound percent recoveries were acceptable, or qualification of data was not required due to surrogate recoveries.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with this sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1

SAMPLE IDENTIFICATION NUMBERS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

S-031005-PP-059

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Volatile Organic Compounds (VOCs)	SW-846 8260B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP-VOCs	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Arsenic	SW-846 1311/6010B

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
VOCs	- 14 days from sample collection to completion of analysis
SVOCs	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Arsenic	- 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/26 DATE: March 18, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the two soil samples collected on March 9, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1

**SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

S-030905-PP-055

S-030905-PP-057

TABLE 2

SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP-Arsenic	SW-846 1311/6010B
TCLP-Semivolatile Organic Compounds (SVOCs)	SW-846 1311/8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B

Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample leaching to completion of analysis
TCLP-Arsenic	- 180 days from sample leaching to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/25 DATE: March 18, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the seven soil samples collected on March 4, 2005, from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-030405-PP-053
S-030405-PP-240
S-030405-PP-241
S-030405-PP-242
S-030405-PP-243
S-030405-PP-244
S-030405-PP-245

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Arsenic	SW-846 1311/6010B

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
SVOCS	<ul style="list-style-type: none"> - 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
Total Arsenic	<ul style="list-style-type: none"> - 180 days from sample collection to completion of analysis
TCLP	<ul style="list-style-type: none"> - 14 days from sample collection to leaching
TCLP - SVOCs	<ul style="list-style-type: none"> - 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	<ul style="list-style-type: none"> - 14 days from sample collection (leaching) to completion of analysis
TCLP-Arsenic	<ul style="list-style-type: none"> - 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/24 DATE: March 18, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for two soil samples collected on March 2, 2005, from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compound percent recoveries were acceptable, or qualification of data was not required due to surrogate recoveries.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1

**SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

S-030205-PP-049

S-030205-PP-051

TABLE 2

SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP-Arsenic	SW-846 1311/6010B
TCLP-Semivolatile Organic Compounds (SVOCs)	SW-846 1311/8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B

Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample leaching to completion of analysis
TCLP-Arsenic	- 180 days from sample leaching to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/23 DATE: March 18, 2005

RE: **Data Quality Assessment and Validation for the Soil Sample Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one soil sample collected on March 1, 2005, from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois. The sample identified in Table 1 was analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The sample was prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative sample were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compound percent recoveries were acceptable, or qualification of data was not required due to surrogate recoveries.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with this sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1

SAMPLE IDENTIFICATION NUMBERS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

S-030105-PP-047

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP-Arsenic	SW-846 1311/6010B
TCLP-Semivolatile Organic Compounds (SVOCs)	SW-846 1311/8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B

Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample leaching to completion of analysis
TCLP-Arsenic	- 180 days from sample leaching to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/22 DATE: March 14, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for four soil samples collected on February 25, 2005, from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compound percent recoveries were acceptable, or qualification of data was not required due to surrogate recoveries.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1

SAMPLE IDENTIFICATION NUMBERS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

S-022505-PP-045

S-022505-PP-237

S-022505-PP-238

S-022505-PP-239

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Arsenic	SW-846 1311/6010B

¹ Methods were referenced from:
SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
SVOCS	<ul style="list-style-type: none"> - 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
Total Arsenic	<ul style="list-style-type: none"> - 180 days from sample collection to completion of analysis
TCLP	<ul style="list-style-type: none"> - 14 days from sample collection to leaching
TCLP - SVOCs	<ul style="list-style-type: none"> - 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	<ul style="list-style-type: none"> - 14 days from sample collection (leaching) to completion of analysis
TCLP-Arsenic	<ul style="list-style-type: none"> - 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/21 DATE: March 11, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for two water and 11 soil samples collected on February 22, 2005, from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The results for o, m, and p-cresol, pentachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol in sample S-022205-PP-041 have been qualified as estimated (UJ) due to poor recoveries of the acidic surrogate compounds in this sample. For the remaining samples, the surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

laboratory control sample percent recovery and RPD data were acceptable.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included arsenic and SVOC analyses of two equipment blank samples. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no analytes detected in the equipment blank samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, with the qualifications stated above.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-022205-PP-041
S-022205-PP-043
S-022205-PP-228
S-022205-PP-229
S-022205-PP-230
S-022205-PP-231
S-022205-PP-232
S-022205-PP-233
S-022205-PP-234
S-022205-PP-235
S-022205-PP-236
W-022205-PP-506
W-022205-PP-507

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Arsenic	SW-846 1311/6010B

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
SVOCS -water	- 7 days from sample collection to extraction
SVOCS - soil	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
Total Arsenic	- 180 days from sample collection to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Arsenic	- 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/20 DATE: March 3, 2005

RE: **Data Quality Assessment and Validation for Soil Sample Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one-soil sample collected on February 16, 2005, from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois. The sample identified in Table 1 was analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The sample was prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative sample was not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The results for o-cresol, m-cresol, p-cresol, pentachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol, have been qualified as estimated (UJ) due to poor recoveries of the acidic semivolatile surrogate compounds in this sample.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with this sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, with the qualifications stated above.

Attachments

TABLE 1

SAMPLE IDENTIFICATION NUMBERS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

S-021605-PP-035

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP-Arsenic	SW-846 1311/6010B
TCLP-Semivolatile Organic Compounds (SVOCs)	SW-846 1311/8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B

Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
TCLP-Arsenic	- 180 days from sample collection to completion of analysis
TCLP - SVOCs	- 14 days from sample collection to leaching - 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection to leaching - 14 days from sample leaching to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/19 DATE: February 28, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for one water and 16 soil samples collected on February 11, 2005, from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included arsenic and SVOC analyses of one equipment blank sample. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no target analytes detected in the equipment blank sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-021105-PP-191
S-021105-PP-192
S-021105-PP-193
S-021105-PP-194
S-021105-PP-195
S-021105-PP-196
S-021105-PP-197
S-021105-PP-198
S-021105-PP-199
S-021105-PP-200
S-021105-PP-201
S-021105-PP-202
S-021105-PP-203
S-021105-PP-204
S-021105-PP-205
S-021105-PP-206
W-021105-PP-504

TABLE 2
SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs (water)	- 7 days from sample collection to extraction
SVOCs (soil)	- 14 days from sample collection to extraction
	- 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/18 DATE: February 23, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the three soil samples collected on February 10, 2005, from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The results for o-cresol, m-cresol, p-cresol, pentachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol, in sample S-021005-PP-031 have been qualified as estimated (UJ) due to poor recoveries of the acidic surrogate compounds in this sample. For the remaining samples, the surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

laboratory control sample percent recovery and RPD data were acceptable.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, with the qualifications stated above.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-021005-PP-029

S-021005-PP-031

S-021005-PP-033

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Toxicity Characteristic Leaching Procedure (TCLP)	SW-846 1311
TCLP-Arsenic	SW-846 1311/6010B
TCLP-Semivolatile Organic Compounds (SVOCs)	SW-846 1311/8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B

Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
TCLP-Arsenic	- 180 days from sample collection to completion of analysis
TCLP - SVOCs	- 14 days from sample collection to leaching - 7 days from sample leaching to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection to leaching - 14 days from sample leaching to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/17 DATE: February 21, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the five soil samples collected on February 7, 2005, from the Waukegan Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1

**SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

S-020705-PP-025

S-020705-PP-027

S-020705-PP-188

S-020705-PP-189

S-020705-PP-190

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Arsenic	SW-846 1311/6010B

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample collection (leaching) to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Arsenic	- 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/16 DATE: February 18, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the one water and 15 soil samples collected on February 2, 2005, from the Waukegan Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The results for o-cresol, m-cresol, p-cresol, pentachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol, in samples S-020205-PP-021 and S-020205-PP-023 have been qualified as estimated (UJ) due to poor recoveries of the acidic surrogate compounds in these samples. For the remaining samples, the surrogate compounds percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

(RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included arsenic and SVOC analyses of one equipment blank sample. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no analytes detected in the equipment blank sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, with the qualifications stated above.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-020205-PP-021
S-020205-PP-023
S-020205-PP-175
S-020205-PP-176
S-020205-PP-177
S-020205-PP-178
S-020205-PP-179
S-020205-PP-180
S-020205-PP-181
S-020205-PP-182
S-020205-PP-183
S-020205-PP-184
S-020205-PP-185
S-020205-PP-186
S-020205-PP-187
W-020205-PP-503

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Arsenic	SW-846 1311/6010B/7470A

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample collection (leaching) to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Arsenic	- 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/15 DATE: February 15, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the one water and 15 soil samples collected on January 31, 2005, from the Waukegan Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The results for o-cresol, m-cresol, p-cresol, pentachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol, in sample S-013105-PP-019 have been qualified as estimated (UJ) due to poor recoveries of the acidic surrogate compounds. For the remaining samples, the surrogate compound percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

laboratory control sample percent recovery and RPD data were acceptable.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included arsenic and SVOC analyses of one equipment blank sample. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no analytes detected in the equipment blank sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, with the qualifications stated above.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-013105-PP-017
S-013105-PP-019
S-013105-PP-162
S-013105-PP-163
S-013105-PP-164
S-013105-PP-165
S-013105-PP-166
S-013105-PP-167
S-013105-PP-168
S-013105-PP-169
S-013105-PP-170
S-013105-PP-171
S-013105-PP-172
S-013105-PP-173
S-013105-PP-174
W-013105-PP-502

TABLE 2

SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Arsenic	SW-846 1311/6010B

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample collection (leaching) to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Arsenic	- 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/14 DATE: January 27, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the nine soil samples collected on January 12, 2005, from the Waukegan Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compound percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with this sampling event.

Overall Assessment

The temperature of the sample shipping cooler exceeded the recommended sample holding temperature, upon arrival at the laboratory. No qualification of data was judged to be necessary. The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-011205-PP-154
S-011205-PP-155
S-011205-PP-156
S-011205-PP-157
S-011205-PP-158
S-011205-PP-159
S-011205-PP-160
S-011205-PP-161
S-011205-PP-015

TABLE 2

SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Arsenic	SW-846 1311/6010B

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample collection (leaching) to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Arsenic	- 180 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/13 DATE: January 24, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the one water and four soil samples collected on January 10, 2005, from the Waukegan Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compound percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included arsenic and SVOC analyses of one equipment blank sample. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no analytes detected in the equipment blank sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-011005-PP-013
S-011005-PP-151
S-011005-PP-152
S-011005-PP-153
W-011005-PP-501

TABLE 2

SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Metals	SW-846 1311/6010B/7470A

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample collection (leaching) to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Metals	- 180 days from sample collection to completion of analysis
TCLP-Mercury	- 28 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/12 DATE: January 21, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the one water and nine soil samples collected on January 6, 2005, from the Waukegan Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The result for 4-methylphenol (ND) in sample S-010605-PP-150 has been qualified as estimated (UJ) due to poor recoveries of two acidic surrogate compounds. For the remaining samples, the surrogate compound percent recoveries were acceptable, or qualification of data was not required.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC analyses associated with this sampling event included arsenic and SVOC analyses of one equipment blank sample. Field equipment blank data were evaluated to monitor the efficacy of the field decontamination procedures. There were no analytes detected in the equipment blank sample.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, with the qualification stated above.

Attachments

TABLE 1

SAMPLE IDENTIFICATION NUMBERS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

S-010605-PP-009
S-010605-PP-011
S-010605-PP-144
S-010605-PP-145
S-010605-PP-146
S-010605-PP-147
S-010605-PP-148
S-010605-PP-149
S-010605-PP-150
W-010605-PP-500

TABLE 2

SUMMARY OF ANALYTICAL METHODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Metals	SW-846 1311/6010B/7470A

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample collection (leaching) to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Metals	- 180 days from sample collection to completion of analysis
TCLP-Mercury	- 28 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/11 DATE: January 21, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the 16 soil samples collected on January 4, 2005, from the Waukegan Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compound percent recoveries were acceptable, or qualification of data was not required due to surrogate recoveries.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-010405-PP-004
S-010405-PP-007
S-010405-PP-008
S-010405-PP-131
S-010405-PP-132
S-010405-PP-133
S-010405-PP-134
S-010405-PP-135
S-010405-PP-136
S-010405-PP-137
S-010405-PP-138
S-010405-PP-139
S-010405-PP-140
S-010405-PP-141
S-010405-PP-142
S-010405-PP-143

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Metals	SW-846 1311/6010B/7470A

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample collection (leaching) to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Metals	- 180 days from sample collection to completion of analysis
TCLP-Mercury	- 28 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/10 DATE: January 14, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the nine soil samples collected on December 9, 2004, from the Waukegan Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compound percent recoveries were acceptable, or qualification of data was not required due to surrogate recoveries.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-120904-PP-001
S-120904-PP-002
S-120904-PP-003
S-120904-PP-101
S-120904-PP-102
S-120904-PP-103
S-120904-PP-104
S-120904-PP-105
S-120904-PP-106

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Metals	SW-846 1311/6010B/7470A

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample collection (leaching) to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Metals	- 180 days from sample collection to completion of analysis
TCLP-Mercury	- 28 days from sample collection to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/9 DATE: January 12, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the 21 soil samples collected on December 16, 2004, from the Waukegan Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compound percent recoveries were acceptable, or qualification of data was not required due to surrogate recoveries.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-121604-TL-110
S-121604-TL-111
S-121604-TL-112
S-121604-TL-113
S-121604-TL-114
S-121604-TL-115
S-121604-TL-116
S-121604-TL-117
S-121604-TL-118
S-121604-TL-119
S-121604-TL-120
S-121604-TL-121
S-121604-TL-122
S-121604-TL-123
S-121604-TL-124
S-121604-TL-125
S-121604-TL-126
S-121604-TL-127
S-121604-TL-128
S-121604-TL-129
S-121604-TL-130

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C

¹ Methods were referenced from:
 SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846,
 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
SVOCs	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis



MEMORANDUM

TO: Tim Leo REF. NO.: 019023

FROM: Dave Hendren/lg/8 DATE: January 12, 2005

RE: **Data Quality Assessment and Validation for Soil Samples Collected from the Waukegan Manufactured Coke and Gas Site in Waukegan, Illinois.**

The following details the data quality assessment and validation conducted for the five soil samples collected on December 14, 2004, from the Waukegan Coke and Gas Site in Waukegan, Illinois. The samples identified in Table 1 were analyzed for the parameters shown in Table 2, by Severn Trent Laboratories (STL) of North Canton, Ohio. The quality assurance criteria used to assess the data were established by the method.¹

Holding Time Period

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Sample Data

Method blank sample data were evaluated to verify that analytes detected in the investigative samples were not attributable to laboratory conditions or procedures. There were no target compounds detected in the method blanks.

Surrogate Compound Analyses

Analytical performance on an individual sample basis for organic analyses was evaluated by the percent recovery data of surrogate compounds that were added to each sample prior to preparation and analysis. The surrogate compound percent recoveries were acceptable, or qualification of data was not required due to surrogate recoveries.

Laboratory Control Sample (LCS) Analyses

Analytical accuracy and precision were evaluated by the percent recovery and relative percent difference (RPD) data from the analysis of LCS samples (also referred to as laboratory fortified blanks). The duplicate laboratory control sample percent recovery and RPD data were acceptable.

¹ Application of quality assurance evaluation criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The MS/MSD percent recovery and RPD data were acceptable, or qualification of data was not required due to MS/MSD recoveries.

Field Quality Assurance/Quality Control (QA/QC)

There were no field QA/QC analyses associated with these samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use, without qualification.

Attachments

TABLE 1
SAMPLE IDENTIFICATION NUMBERS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

S-121404-TL-005
S-121404-TL-006
S-121404-TL-107
S-121404-TL-108
S-121404-TL-109

TABLE 2

SUMMARY OF ANALYTICAL METHODS

SOIL REMEDIAL ACTION

WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Arsenic	SW-846 6010B
Semivolatile Organic Compounds (SVOCs)	SW-846 8270C
TCLP- Volatile Organic Compounds (VOCs)	SW-846 1311/8260B
TCLP-SVOCs	SW-846 1311/8270C
TCLP-Metals	SW-846 1311/6010B/7470A

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through IIIA, November 1986.

TABLE 3

HOLDING TIME PERIODS
SOIL REMEDIAL ACTION
WAUKEGAN MANUFACTURED COKE AND GAS PLANT SITE
WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Total Arsenic	- 180 days from sample collection to completion of analysis
TCLP	- 14 days from sample collection to leaching
TCLP - SVOCs	- 7 days from sample collection (leaching) to extraction - 40 days from extraction to completion of analysis
TCLP-VOCs	- 14 days from sample collection (leaching) to completion of analysis
TCLP-Metals	- 180 days from sample collection to completion of analysis
TCLP-Mercury	- 28 days from sample collection to completion of analysis



MEMORANDUM

TO: Alan VanNorman REF. NO.: 019023-64

FROM: Steve Castagneri/ko/7 DATE: June 25, 2003

RE: **Data Quality Assessment and Validation for the Sediment Samples
Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details a data quality assessment and validation for the sediment samples collected April 23, 2003 from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples were analyzed for the parameters identified in Table 2 by Severn Trent Laboratories of North Canton, Ohio using the methods identified in Table 2. The quality assurance criteria used to assess the data were established by the methods and the quality assurance project plan (QAPP)¹.

Holding Time Periods

The holding time periods are presented in Table 3. The samples were prepared and analyzed within the required holding time periods.

Method Blank Samples

Contamination of samples contributed by laboratory conditions or procedures was monitored by the data from concurrent preparation and analysis of method blank samples. Analytes were not detected in the method blank samples.

Surrogate Compound Analyses

Individual sample performance for the organic analyses was monitored by assessing surrogate compound percent recovery data. The surrogate compound percent recovery data were acceptable.

Laboratory Control Sample Analyses

Laboratory control samples (LCS) analyses were performed to monitor the accuracy of the laboratory preparation and analysis methods. The LCS percent recovery data were acceptable.

¹ Application of quality assurance criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999 and "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", EPA-540/R-94-013, February 1994.

Duplicate LCS Sample Analysis

Duplicate LCSs were analyzed to assess the accuracy and precision of the laboratory preparation and analysis methods. The LCS percent recovery and relative percent difference (RPD) data were acceptable.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. The percent recovery data for aroclor 1016 in one MS/MSD sample violated the acceptance criteria. As a result, the aroclor 1248 data for sample S-042303-WP-003 should be qualified as estimated (J). The remaining MS/MSD percent recovery and RPD data were acceptable.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC consisted of one field equipment rinsate blank sample and one field duplicate sample set.

To monitor the effectiveness of the equipment decontamination procedures, a field equipment rinsate blank sample was collected and analyzed. Analytes were not detected in the field equipment rinsate blank sample.

Overall precision for the sampling and analysis event was monitored by the results of a field duplicate sample set. Table 4 summarizes detected analyte data from the field duplicate sample set. The QAPP specified an advisory RPD limit of 50 percent for evaluating field duplicate data. The RPD data were acceptable for the field duplicate sample set.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use with the qualifications noted.

Attachments

TABLE 1

**SAMPLE IDENTIFICATION NUMBERS
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

Sample ID

S-042303-WP-001
S-042303-WP-002
S-042303-WP-003
W-042303-WP-004
S-042303-WP-005

TABLE 2

SUMMARY OF ANALYTICAL METHODS

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Total Petroleum Hydrocarbons - Diesel Range Organics (TPH-DRO)	SW-846 8015B
Polychlorinated Biphenyls (PCBs)	SW-846 8082
Polynuclear Aromatic Hydrocarbons (PAHs)	SW-846 8270C (SIM) ²
Total arsenic	SW-846 6010B

¹ Methods were referenced from:
SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through III, November 1986.

² SIM - Selective Ion Monitoring

TABLE 3

**HOLDING TIME PERIODS
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

<i>Parameter</i>	<i>Holding Time Period</i>
TPH-DRO,PCBs,PAHs	<ul style="list-style-type: none">- 14 days from sample collection to extraction- 40 days from extraction to completion of analysis
Total arsenic	<ul style="list-style-type: none">- 180 days from sample collection to completion of analysis

TABLE 4

**SUMMARY OF DETECTED ANALYTES FROM FIELD DUPLICATE SAMPLE SET
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

<i>Analyte</i>	<i>Investigative Sample S-042303-WP-001</i>	<i>Duplicate Sample S-042303-WP-002</i>	<i>RPD¹</i>
Acenaphthene	920 µg/kg	850 µg/kg	7.9
Acenaphthylene	66 µg/kg	61 µg/kg	7.9
Anthracene	570 µg/kg	480 µg/kg	17
Benzo(a)anthracene	720 µg/kg	650 µg/kg	10
Benzo(a)pyrene	420 µg/kg	350 µg/kg	18
Benzo(b)fluoranthene	540 µg/kg	490 µg/kg	9.7
Benzo(ghi)perylene	190 µg/kg	150 µg/kg	24
Benzo(k)fluoranthene	360 µg/kg	280 µg/kg	25
Chrysene	720 µg/kg	660 µg/kg	8.7
Dibenzo(a,h)anthracene	65 µg/kg	56 µg/kg	15
Fluoranthene	1,900 µg/kg	1,600 µg/kg	17
Fluorene	760 µg/kg	690 µg/kg	9.7
Indeno(1,2,3-cd)pyrene	170 µg/kg	140 µg/kg	19
Naphthalene	3,800 µg/kg	3,200 µg/kg	17
Phenanthrene	1,900 µg/kg	1,600 µg/kg	17
Pyrene	1,600 µg/kg	1,300 µg/kg	21
TPH-DRO	87 mg/kg	120 mg/kg	32
Aroclor 1248	760 µg/kg	690 µg/kg	10
Arsenic	21.2 mg/kg	20.5 mg/kg	3.4

¹ RPD - Relative Percent Difference



MEMORANDUM

TO: Steve Wanner REF. NO.: 019023-51

FROM: Steve Castagneri/ko/2 DATE: July 26, 2002

C.C.: Steve Day

RE: **Data Quality Assessment and Validation for the Soil Samples
Collected from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois.**

The following details a data quality assessment and validation for the soil samples collected June 3 through June 14, 2002 in support of the Soil Pre-Design Study activities from the Waukegan Manufactured Gas and Coke Plant Site in Waukegan, Illinois. The samples were selectively analyzed for total arsenic and site-specific semivolatile organic compounds (SVOCs) by Severn Trent Laboratories of North Canton, Ohio. The analytical methods are identified in Table 1. The quality assurance criteria used to assess the data were established by the methods and the quality assurance project plan (QAPP)¹.

Holding Time Periods

The holding time periods are presented in Table 2. The samples were prepared and analyzed within the required holding time periods.

Method Blank Samples

Contamination of samples contributed by laboratory conditions or procedures was monitored by the data from concurrent preparation and analysis of method blank samples. Analytes were not detected in the method blank samples.

Internal Standards Data

The laboratory indicated that the internal standards data for several SVOC samples violated the acceptance criteria. Table 3 presents the sample data that should be qualified as a result of violation of internal standard acceptance criteria. The remaining internal standards data were acceptable.

¹ Application of quality assurance criteria was consistent with the relevant criteria in "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999 and "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", EPA-540/R-94-013, February 1994.

Surrogate Compound Analyses

Individual sample performance for the organic analyses was monitored by assessing surrogate compound percent recovery data. The surrogate compound percent recovery data for several SVOC samples could not be assessed as the surrogates were diluted out due to high concentrations of target analytes. Data qualification in these instances is not required. The remaining surrogate compound percent recovery data were acceptable.

Laboratory Control Sample Analyses

Laboratory control sample (LCS) analyses were performed to monitor the accuracy of the laboratory preparation and analysis methods. The LCS percent recovery data were acceptable.

Duplicate LCS Sample Analysis

Duplicate LCSs were analyzed to assess the accuracy and precision of the laboratory preparation and analysis methods. The LCS percent recovery and relative percent difference (RPD) data were acceptable.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

To assess the accuracy and precision of the analytical methods relative to the sample matrices, MS/MSD percent recoveries and RPDs were determined. Table 4 presents the sample data that should be qualified resulting from violation of MS/MSD percent recovery acceptance criteria. The percent recovery data for several SVOC compounds in numerous MS/MSD samples violated the acceptance criteria due to dilution. Data qualification in these instances is not required. In addition, the percent recovery data for total arsenic in one MS/MSD sample could not be determined as the amount of arsenic spiked added to the sample was insignificant compared the native arsenic concentration present in the sample. Data qualification in this instance is not required. The remaining MS/MSD percent recovery and RPD data were acceptable.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC consisted of twenty-eight field equipment rinsate blank samples and seventeen field duplicate sample sets.

To monitor the effectiveness of the equipment decontamination procedures, field equipment rinsate blank samples were collected and analyzed. Analytes were not detected in the field equipment rinsate blank samples.

Overall precision for the sampling and analysis event was monitored by the results of field duplicate sample sets. Table 5 summarizes detected analyte data from the field duplicate sample sets. The QAPP specified an advisory RPD limit of 50 percent for evaluating field duplicate data. The RPDs calculated for select SVOC compounds in several duplicate sample sets exceeded the advisory RPD limit and indicate excessive variability. Table 6 presents the sample data that should be qualified resulting from excessive field duplicate variability. The remaining RPD data were acceptable or analytes were not present in the samples in concentrations significant enough to effectively evaluate precision.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision and are suitable for their intended use with the qualifications noted.

Attachments

TABLE 1

SUMMARY OF ANALYTICAL METHODS

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Analytical Method</i> ¹
Site-specific semivolatile organic compounds (SVOCs) ²	SW-846 8270C
Total arsenic	SW-846 6010B

¹ Methods were referenced from:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through III, November 1986.

² Site-specific SVOCs: Benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, dibenzofuran, indeno(1,2,3-cd)pyrene, 4-methylphenol, naphthalene.

TABLE 2

HOLDING TIME PERIODS

WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE

WAUKEGAN, ILLINOIS

<i>Parameter</i>	<i>Holding Time Period</i>
Site-specific SVOCs	<ul style="list-style-type: none"> - 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
Total arsenic	<ul style="list-style-type: none"> - 180 days from sample collection to completion of analysis

TABLE 3

**SUMMARY OF QUALIFIED DATA RESULTING FROM VIOLATION OF
INTERNAL STANDARD ACCEPTANCE CRITERIA
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

<i>Sample ID</i>	<i>Analyte</i>	<i>Qualifier</i> ¹
S-060602-WP-037A	Benzo(a)anthracene	J
	Indeno(1,2,3-cd)pyrene	J
S-060602-WP-037B	Benzo(a)anthracene	J
	Indeno(1,2,3-cd)pyrene	J
	Benzo(b)fluoranthene	J
	Benzo(a)pyrene	J
	Dibenzofuran	J
	4-Methylphenol	J
	Naphthalene	J
S-060602-WP-039B	Benzo(a)anthracene	J
	Indeno(1,2,3-cd)pyrene	J
S-060602-WP-040A	Benzo(a)anthracene	J
	Indeno(1,2,3-cd)pyrene	J
S-061102-WP-097B	Benzo(a)anthracene	J
	Indeno(1,2,3-cd)pyrene	J
	Benzo(a)pyrene	J
	Benzo(b)fluoranthene	J
S-061102-WP-0101A	Benzo(a)anthracene	J
S-061202-WP-0117B	Dibenzofuran	J
	Benzo(a)anthracene	J
S-061202-WP-0120B	Dibenzofuran	J
S-061402-WP-0146B	Benzo(a)anthracene	J
	Benzo(b)fluoranthene	J
	Benzo(a)pyrene	J
	Dibenzofuran	J
	Indeno(1,2,3-cd)pyrene	J

¹ The sample results should be qualified as:

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

TABLE 4

**SUMMARY OF QUALIFIED DATA RESULTING FROM VIOLATION OF
MS/MSD PERCENT RECOVERY ACCEPTANCE CRITERIA
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

<i>Analyte</i>	<i>Sample ID</i>	<i>Qualifier</i> ¹
Total arsenic	S-061302-WP-0122A	J
	S-061302-WP-0122B	J
	S-061302-WP-0123A	J
	S-061302-WP-0124A	J
	S-061302-WP-0124B	J
	S-061302-WP-0124C	J
	S-061302-WP-0127A	J
	S-061302-WP-0127B	J
	S-061302-WP-0127C	J
	S-061302-WP-0128A	J
	S-061302-WP-0128B	J
	S-061302-WP-0128C	J
	S-061302-WP-0129A	J
	S-061302-WP-0129B	J
	S-061302-WP-0129C	J
	S-061302-WP-0130A	J
	S-061302-WP-0130B	J
	S-061302-WP-0130C	J
	S-061302-WP-0131A	J
	S-061302-WP-0131B	J
	S-061302-WP-0132A	J
	S-061302-WP-0132B	J
	S-061302-WP-0132C	J
	S-061302-WP-0136B	J
	S-061302-WP-0137A	J
	S-061302-WP-0137B	J
	S-061302-WP-0138A	J
	S-061302-WP-0142A	J
	S-061302-WP-0142B	J
	S-061302-WP-0142C	J

¹ The sample results should be qualified as:

J - The associated value is an estimated quantity.

TABLE 5

**SUMMARY OF DETECTED ANALYTES FROM FIELD DUPLICATE SAMPLE SETS
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

<i>Analyte</i>	<i>Investigative Sample S-060302-WP-006B (µg/Kg)</i>	<i>Duplicate Sample S-060302-WP-007 (µg/Kg)</i>	<i>RPD¹</i>
Naphthalene	150,000	670,000	127
<i>Analyte</i>	<i>Investigative Sample S-060502-WP-017C (µg/Kg)</i>	<i>Duplicate Sample S-060502-WP-018 (µg/Kg)</i>	<i>RPD</i>
Benzo(a)anthracene	1,600	1,700	6.1
Benzo(b)fluoranthene	2,100	2,400	13
Benzo(a)pyrene	1,100	1,300	17
Indeno(1,2,3-cd)pyrene	560	600	6.9
Naphthalene	1,700	1,300	27
<i>Analyte</i>	<i>Investigative Sample S-060602-WP-040A (µg/Kg)</i>	<i>Duplicate Sample S-060602-WP-041 (µg/Kg)</i>	<i>RPD</i>
Benzo(a)anthracene	12,000	4,200	96
Benzo(b)fluoranthene	13,000	5,100	87
Benzo(a)pyrene	7,700	2,700	96
Indeno(1,2,3-cd)pyrene	2,400	1,000	82
<i>Analyte</i>	<i>Investigative Sample S-060602-WP-050A (µg/Kg)</i>	<i>Duplicate Sample S-060602-WP-051 (µg/Kg)</i>	<i>RPD</i>
Benzo(a)anthracene	3,700	1,200	102
Benzo(b)fluoranthene	4,400	1,500	98
Benzo(a)pyrene	2,500	850	99
Dibenzo(a,h)anthracene	770	ND(380) ²	NC ³
Indeno(1,2,3-cd)pyrene	1,400	560	86
Naphthalene	2,100	490	124
<i>Analyte</i>	<i>Investigative Sample S-060702-WP-064A (µg/Kg)</i>	<i>Duplicate Sample S-060702-WP-065 (µg/Kg)</i>	<i>RPD</i>
Naphthalene	1,100,000	560,000	65

TABLE 5

**SUMMARY OF DETECTED ANALYTES FROM FIELD DUPLICATE SAMPLE SETS
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

<i>Analyte</i>	<i>Investigative Sample S-061002-WP-075A (µg/Kg)</i>	<i>Duplicate Sample S-061002-WP-077 (µg/Kg)</i>	<i>RPD</i>
Benzo(a)anthracene	17,000	5,800	98
Benzo(b)fluoranthene	24,000	7,400	106
Benzo(a)pyrene	20,000	5,800	110
Indeno(1,2,3-cd)pyrene	9,600	2,800	110
Naphthalene	ND(4400)	1,800	NC

<i>Analyte</i>	<i>Investigative Sample S-061102-WP-090B (µg/Kg)</i>	<i>Duplicate Sample S-061102-WP-091B (µg/Kg)</i>	<i>RPD</i>
Benzo(a)anthracene	46,000	46,000	0
Benzo(b)fluoranthene	44,000	32,000	32
Benzo(a)pyrene	31,000	28,000	10
Dibenzofuran	37,000	31,000	18
Indeno(1,2,3-cd)pyrene	12,000	11,000	8.7
Naphthalene	46,000	30,000	42

<i>Analyte</i>	<i>Investigative Sample S-061102-WP-102A</i>	<i>Duplicate Sample S-061102-WP-103A</i>	<i>RPD</i>
Benzo(a)anthracene	2,200 µg/Kg	3,400 µg/Kg	43
Benzo(b)fluoranthene	3,100 µg/Kg	4,400 µg/Kg	35
Benzo(a)pyrene	1,700 µg/Kg	2,400 µg/Kg	34
Dibenzo(a,h)anthracene	520 µg/Kg	ND(750) µg/Kg	NC
Dibenzofuran	400 µg/Kg	ND(750) µg/Kg	NC
Indeno(1,2,3-cd)pyrene	890 µg/Kg	1,300 µg/Kg	37
Naphthalene	1,700 µg/Kg	1,200 µg/Kg	35
Total Arsenic	64.2 mg/Kg	35.8 mg/Kg	57

<i>Analyte</i>	<i>Investigative Sample S-061202-WP-106A (µg/Kg)</i>	<i>Duplicate Sample S-061202-WP-107A (µg/Kg)</i>	<i>RPD</i>
Benzo(a)anthracene	ND(4000)	26,000	NC
Benzo(b)fluoranthene	ND(4000)	32,000	NC
Benzo(a)pyrene	ND(4000)	21,000	NC

TABLE 5

**SUMMARY OF DETECTED ANALYTES FROM FIELD DUPLICATE SAMPLE SETS
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

<i>Analyte</i>	<i>Investigative Sample S-061302-WP-122A</i>	<i>Duplicate Sample S-061302-WP-123A</i>	<i>RPD</i>
Benzo(a)anthracene	5,700 µg/Kg	11,000 µg/Kg	64
Benzo(b)fluoranthene	12,000 µg/Kg	17,000 µg/Kg	35
Benzo(a)pyrene	7,100 µg/Kg	12,000 µg/Kg	51
Dibenzofuran	3,800 µg/Kg	3,600 µg/Kg	5.4
Indeno(1,2,3-cd)pyrene	5,900 µg/Kg	8,600 µg/Kg	37
Naphthalene	18,000 µg/Kg	16,000 µg/Kg	12
Total Arsenic	1,290 mg/Kg	1,850 mg/Kg	36

<i>Analyte</i>	<i>Investigative Sample S-061302-WP-0137A</i>	<i>Duplicate Sample S-061302-WP-0138A</i>	<i>RPD</i>
Benzo(a)anthracene	1,700 µg/Kg	1,800 µg/Kg	5.7
Benzo(b)fluoranthene	2,500 µg/Kg	4,000 µg/Kg	46
Benzo(a)pyrene	1,700 µg/Kg	1,800 µg/Kg	5.7
Dibenzo(a,h)anthracene	520 µg/Kg	690 µg/Kg	28
Dibenzofuran	620 µg/Kg	680 µg/Kg	9.2
Indeno(1,2,3-cd)pyrene	1,100 µg/Kg	1,500 µg/Kg	31
Naphthalene	3,900 µg/Kg	4,900 µg/Kg	23
Total Arsenic	82.6 mg/Kg	91.2 mg/Kg	9.9

<i>Analyte</i>	<i>Investigative Sample S-061402-WP-0146A (mg/Kg)</i>	<i>Duplicate Sample S-061402-WP-0147A (mg/Kg)</i>	<i>RPD</i>
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Total Arsenic	838	771	8.3
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<i>Analyte</i>	<i>Investigative Sample S-061102-WP-206 (mg/Kg)</i>	<i>Duplicate Sample S-061102-WP-207 (mg/Kg)</i>	<i>RPD</i>
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Total Arsenic	8.1	6.7	19
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<i>Analyte</i>	<i>Investigative Sample S-061202-WP-227 (µg/Kg)</i>	<i>Duplicate Sample S-061202-WP-228 (µg/Kg)</i>	<i>RPD</i>
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Benzo(a)anthracene	12,000	26,000	74
Benzo(b)fluoranthene	11,000	25,000	78
Benzo(a)pyrene	7,800	18,000	79
Dibenzofuran	5,700	12,000	71
Naphthalene	41,000	77,000	61

TABLE 5

**SUMMARY OF DETECTED ANALYTES FROM FIELD DUPLICATE SAMPLE SETS
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

<i>Analyte</i>	<i>Investigative Sample S-061202-WP-0243 (µg/Kg)</i>	<i>Duplicate Sample S-061202-WP-0244 (µg/Kg)</i>	<i>RPD</i>
Benzo(b)fluoranthene	ND(380)	730	NC

¹ RPD - Relative Percent Difference

² ND () - Not detected above the level of the associated value.

³ NC - Not Calculable

TABLE 6

**SUMMARY OF QUALIFIED DATA RESULTING FROM
EXCESSIVE FIELD DUPLICATE SAMPLE VARIABILITY
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS**

<i>Sample ID</i>	<i>Analyte</i>	<i>Qualifier</i> ¹
S-060302-WP-006B	Naphthalene	J
S-060302-WP-007	Naphthalene	J
S-060602-WP-040A	Benzo(b)fluoranthene	J
S-060602-WP-041	Benzo(a)anthracene	J
	Benzo(b)fluoranthene	J
S-060702-WP-064A	Naphthalene	J
S-060702-WP-065	Naphthalene	J
S-061002-WP-075A	Benzo(b)fluoranthene	J
S-061002-WP-077	Benzo(b)fluoranthene	J
S-061102-WP-102A	Total Arsenic	J
S-061102-WP-103A	Total Arsenic	J
S-061202-WP-0227	Naphthalene	J
S-061202-WP-0228	Naphthalene	J

¹ The sample results should be qualified as:

Organic

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Inorganic

J - The associated value is an estimated quantity.